

From European junior's final to the Olympic final

Beijing 2008 - ?

London 2012 - ?

Why not?

From European junior's final to the Olympic final

What our young swimmers must do to reach the
Olympic finals?

The answer is clear – they have to swim faster.

How faster?

From European junior's final to the Olympic final

| Distance/ Stroke | Final (Average) results, men | | % |
|---------------------|--|----------------------------------|------|
| | European Junior, Palma de Mallorca | World Champion., Melbourne | |
| 50 free | 0:23,32 | 0:22,05 | -5,5 |
| 100 free | 0:51,26 | 0:48,57 | -5,3 |
| 200 free | 1:51,51 | 1:46,99 | -4,1 |
| 400 free | 3:54,13 | 3:46,43 | -3,3 |
| 1500 free | 15:22,19 | 14:55,01 | -7,3 |

From European junior's final to the Olympic final

| Distance/ Stroke | Final (Average) results, men | | % |
|---------------------|------------------------------|-----------|------|
| | Palma de Mallorca | Melbourne | |
| 100 fly | 0:54,50 | 0:51,93 | -4,7 |
| 200 fly | 2:00,61 | 1:55,51 | -4,2 |
| 100 back | 0:57,76 | 0:53,98 | -6,6 |
| 200 back | 2:04,10 | 1:57,13 | -5,6 |
| 100 breast | 1:03,33 | 1:00,73 | -4,1 |
| 200 breast | 2:16,52 | 2:11,31 | -3,8 |

From European junior's final to the Olympic final

| Distance/ Stroke | Final (Average) results, men | | % |
|--------------------------------|------------------------------|-----------|------|
| | Palma de Mallorca | Melbourne | |
| 200 IM | 2:04,61 | 1:58,33 | -5,0 |
| 400 IM | 4:23,25 | 4:12,72 | -4,0 |
| Average Olympic distances, man | | | -4,9 |

From European junior's final to the Olympic final

| Distance/ Stroke | Final (Average) results, woman | | % |
|---------------------|--------------------------------|-----------|------|
| | Palma de Mallorca | Melbourne | |
| 50 free | 0:26,14 | 0:24,85 | -4,9 |
| 100 free | 0:57,23 | 0:54,06 | -5,5 |
| 200 free | 2:03,13 | 1:57,78 | -4,4 |
| 400 free | 4:19,76 | 4:05,69 | -5,4 |
| 800 free | 8:49,56 | 8:27,36 | -4,2 |

From European junior's final to the Olympic final

| Distance/ Stroke | Final (Average) results, woman | | % |
|---------------------|--------------------------------|-----------|------|
| | Palma de Mallorca | Melbourne | |
| 100 fly | 1:01,51 | 0:58,14 | -5,5 |
| 200 fly | 2:13,95 | 2:08,46 | -4,1 |
| 100 back | 1:03,74 | 1:00,71 | -4,8 |
| 200 back | 2:16,93 | 2:09,57 | -5,4 |
| 100 breast | 1:11,57 | 1:07,62 | -5,5 |
| 200 breast | 2:33,63 | 2:26,56 | -4,6 |

From European junior's final to the Olympic final

| Distance/ Stroke | Final (Average) results, woman | | % |
|----------------------------------|--------------------------------|-----------|------|
| | Palma de Mallorca | Melbourne | |
| 200 IM | 2:19,48 | 2:13,19 | -4,5 |
| 400 IM | 4:55,62 | 4:41,84 | -4,7 |
| Average Olympic distances, woman | | | -4,9 |

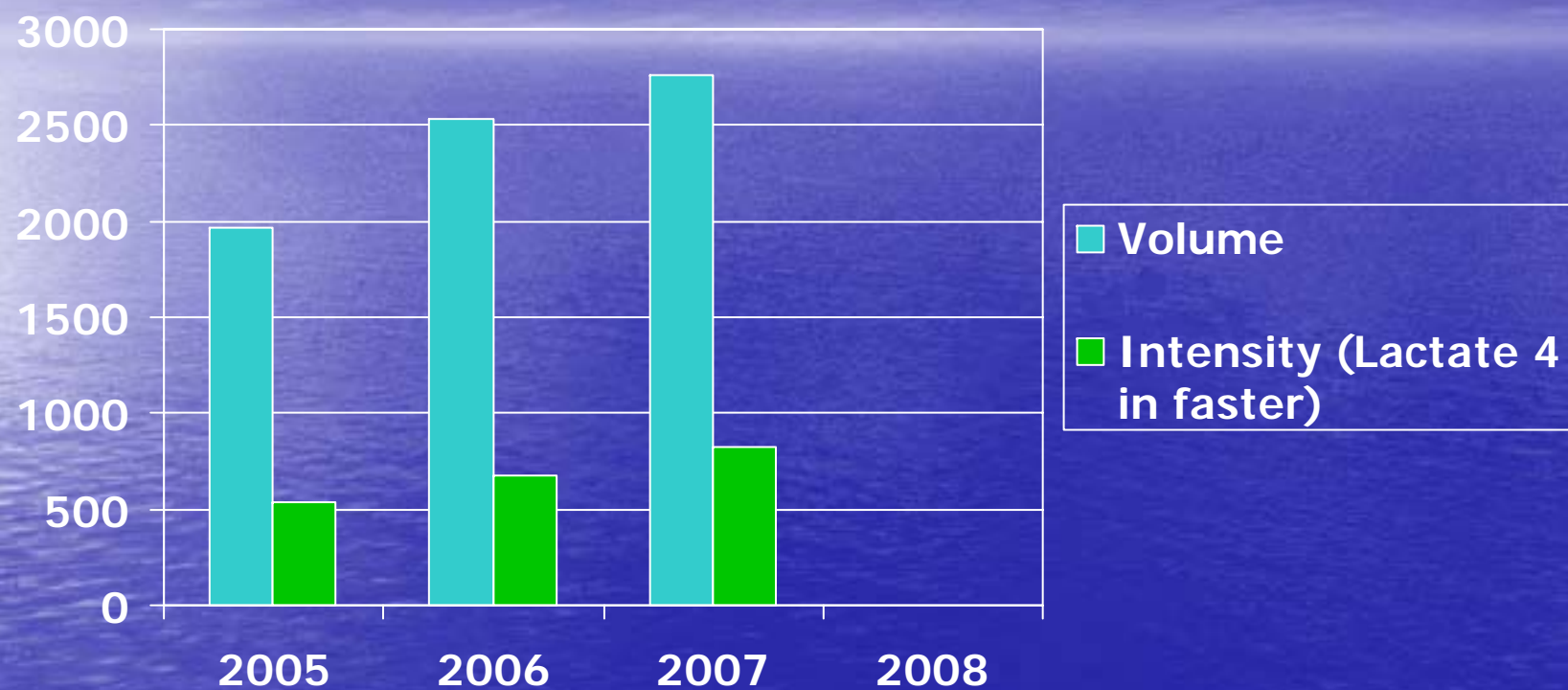
From European junior's final to the Olympic final

| Distance/ Stroke | Final (Average) results, men | | % |
|---------------------------|------------------------------|-----------|------|
| | Palma de Mallorca | Melbourne | |
| 50 free | 0:23,32 | 0:22,05 | -5,5 |
| 50 fly | 0:24,71 | 0:23,64 | -4,3 |
| 50 back | 0:26,73 | 0:25,34 | -5,2 |
| 50 breast | 0:29,04 | 0:28,01 | -3,6 |
| Average 50m distances | | | -4,7 |
| Average Olympic distances | | | -4,9 |

From European junior's final to the Olympic final

| Distance/ Stroke | Final (Average) results, woman | | % |
|---------------------------|--------------------------------|-----------|------|
| | Palma de Mallorca | Melbourne | |
| 50 free | 0:26,14 | 0:24,85 | -4,9 |
| 50 fly | 0:27,83 | 0:26,43 | -5,0 |
| 50 back | 0:30,06 | 0:28,59 | -4,9 |
| 50 breast | 0:32,96 | 0:31,30 | -5,0 |
| Average 50m distances | | | -5,0 |
| Average Olympic distances | | | -4,9 |

From European junior's final to the Olympic final



From European junior's final to the Olympic final

$$V(\text{m/s}) = \text{Stroke Length} \times \text{Stroke Rate}$$

From European junior's final to the Olympic final

I want to emphasize that the change of competitive speed is always a change of Stroke Length and/or Stroke Rate of swimming.

From European junior's final to the Olympic final

Of course we can improve the competition results by making faster turns or starts and improving swimming techniques.

However, generally speaking – if we want to achieve a better result, we have to swim faster.

From European junior's final to the Olympic final

If we have to swim faster.

We have to change the Stroke Length and/or
Stroke Rate.

The Stroke Rate comparison of the World Championship in Barcelona 2003 and European Junior Championship in Linz 2002 (finalists, men)

| Stroke | Swimmers | Distance | | | | | |
|--------|----------|----------|-----|-----|-----|-----|------|
| | | 50 | 100 | 200 | 400 | 800 | 1500 |
| Free | Men | 60 | 51 | 44 | 41 | 40 | 40 |
| | Junior | 61 | 51 | 45 | 46 | - | 42 |
| Fly | Men | 65 | 56 | 48 | | | |
| | Junior | 60 | 56 | 49 | | | |
| Back | Men | 58 | 49 | 41 | | | |
| | Junior | 53 | 46 | 40 | | | |
| Breast | Men | 65 | 50 | 39 | | | |
| | Junior | 62 | 49 | 39 | | | |

The Stroke Rate comparison of the World Championship in Barcelona 2003 and European Junior Championship in Linz 2002 (finalists, women)

| Stroke | Swimmers | Distance | | | | | |
|--------|----------|----------|-----|-----|-----|-----|------|
| | | 50 | 100 | 200 | 400 | 800 | 1500 |
| Free | Women | 61 | 53 | 44 | 45 | 46 | |
| | Junior | 59 | 51 | 46 | 46 | 45 | |
| Fly | Women | 64 | 56 | 51 | | | |
| | Junior | 62 | 53 | 50 | | | |
| Back | Women | 54 | 48 | 41 | | | |
| | Junior | 53 | 46 | 40 | | | |
| Breast | Women | 60 | 50 | 38 | | | |
| | Junior | 63 | 51 | 38 | | | |

From European junior's final to the Olympic final

The Stroke Rate average (World Championship,
Olympic distances, man) is

47,2

The Stroke Rate average (European junior
championship, Olympic distances, man) is

47,6

Difference is just +0,4 stroke per minute or +0,8%

From European junior's final to the Olympic final

The Stroke Rate average (World Championship,
Olympic distances, woman) is

48,5

The Stroke Rate average (European junior
championship, Olympic distances, woman) is

47,7

Difference is just 0,8 stroke per minute or -1,7%

From European junior's final to the Olympic final

We know that the result's differences between the finalist of the World and European junior Championships are

- Woman - - 4,9%
- Man - - 4,9%

Stroke Rate differences are

- Woman - - 1,7%
- Man - + 0,8%

From European junior's final to the Olympic final

Right – he has to count them! And he has to make less strokes!

That is how we came to new variable category, which must be changed if we want to make progress.

Generally speaking – swimmers have to increase the Stroke Length or to decrease the Number of Strokes!

From European junior's final to the Olympic final

**I dare to say that the way to the Olympic final
for our young swimmers goes through the
increase of Stroke Length and therefore
through the decrease of Number of Strokes.**

From European junior's final to the Olympic final

The change of Stroke Length philosophy to Stroke Count philosophy is NOT scientifically proven but it is VERY practical and has many advantages especially for coaches and swimmers, about what I will speak later.

From European junior's final to the Olympic final

Individual comparison:

Ian Thorpe - 400 free

1999 - 28 - 30 - 32 - 30 - 32 - 32 - 32 - 33 = 3:43.85

2001 - 26 - 29 - 28 - 30 - 29 - 31 - 30 - 32 = 3:40.17
WR

1999 - 249 strokes or 31.1 per 50m

2001 - 235 strokes or 29.4 per 50m

14 strokes less

From European junior's final to the Olympic final

Individual comparison:

Ian Thorpe - 200 free

1999 - 29-31-32-33 =1:47.92

2001 - 27-30-30-34 =1:44.06 W Record

1999 - 125 strokes or 31.3 per 50m

2001 - 121 strokes or 30.3 per 50m

4 strokes less

From European junior's final to the Olympic final

Kitajima - 200 breast

Olympic Games 2000:

Semi – 18 – 17 – 19 – 20 = 2:15.71 (74 strokes)

Fukuoka 2001:

Final – 16 – 16 – 17 – 23 = 2:11.21 (72 strokes)

Barcelona 2003:

Final – 16 – 16 – 17 – 20 = 2:09.42 (69 strokes)

Olympic Games 2004:

Final – 16 – 16 – 16 – 21 = 2:09.44 (69 strokes)

From European junior's final to the Olympic final

How much Strokes swimmers has to do for World Record on 100 breast?

Sloudnov - 18 - 22 = 0:59.94

Kitajima - 18 - 23 = 0:59.78

Hansen - 19 - 22 = 0:59.37

And How much Strokes did the less successful swimmers?

Rogulj - 21 - 24 = 1:03.60

Markic - 20 - 23 = 1:03.65

Poljakov - 19 - 25 = 1:03.19

Daid - 23 - 28 = 1:03.11

Bardosa - 21 - 26 = 1:03.36

(Barcelona 2003)

From European junior's final to the Olympic final

Individual comparison:

Michael Phelps - 200 fly

Fukuoka 2001:

$18 - 21 - 22 - 22 = 1:54.58$ (83 strokes) W Record

Barcelona 2003:

$17 - 20 - 20 - 20 = 1:53.98$ (77 strokes) W Record

Melbourne 2007:

$17 - 19 - 20 - 19,5 = 1:52,09$ (75,5 strokes) W Record

From European junior's final to the Olympic final

Final on 100 fly:

1999

18-20 in 21-22 strokes 0:52.61-0:53.60

2001

18... in 20-22 strokes 0:52.10-0:52.97

2003

17-18 in 18-21 strokes 0:50.95-0:52.68

2004

16-18 in 19-21 strokes 0:51.25-0:52.32

2007

16-18 in 19-22 strokes 0:51.41-0:52.26

From European junior's final to the Olympic final

Individual comparison – 200 free:

Michael Phelps

| | |
|-------------|---------|
| 2004 Athene | 1:45.32 |
|-------------|---------|

| | |
|---------------|---------|
| 2005 Montreal | 1:45.20 |
|---------------|---------|

| | |
|--------------|------------------|
| 2008 OI 2008 | - World Record ? |
|--------------|------------------|

From European junior's final to the Olympic final

Individual comparison – 200 free:

Michael Phelps

| | |
|----------------|----------------------------------|
| 2004 Athene | $26 - 29 - 30 - 34 = 1:45.32$ |
| 2005 Montreal | $26 - 28 - 30 - 32 = 1:45.20$ |
| 2007 Melbourne | $26 - 28 - 30 - 29 = 1:43,86$ WR |

From European junior's final to the Olympic final

**If that is what the best swimmers are doing,
then it has to have its own meaning.**

**The answer of that question we will have if we
will compare the Stroke Length and Stroke
Rate of the finalists 1980 and 2003.**

From European junior's final to the Olympic final

Comparison between finalists 1980 and 2003 100 free

(Petrovich 2004)

| Contents | Men | | | Woman | | |
|------------------|------|------|-----------------|-------|------|-----------------|
| | 2003 | 1980 | Different, % | 2003 | 1980 | Different, % |
| Speed, m/s | 2,04 | 1,92 | 6,3 | 1,83 | 1,69 | 8,3 |
| Stroke Length, m | 2,29 | 1,97 | 16,2 | 2,00 | 1,73 | 16,3 |
| Stroke Rate | 51,0 | 57,0 | - 10,5 | 53,0 | 58,0 | - 8,6 |

From European junior's final to the Olympic final

Comparison between finalists 1980 and 2003 200 free

(Petrovich 2004)

| Contents | Men | | | Woman | | |
|------------------|------|------|-----------------|-------|------|-----------------|
| | 2003 | 1980 | Different, % | 2003 | 1980 | Different, % |
| Speed, m/s | 1,86 | 1,75 | 6,3 | 1,68 | 1,58 | 6,3 |
| Stroke Length, m | 2,48 | 2,23 | 11,2 | 2,19 | 1,75 | 25,1 |
| Stroke Rate | 44,0 | 46,0 | - 4,4 | 44,0 | 55,0 | - 20,0 |

From European junior's final to the Olympic final

Comparison between finalists 1980 and 2003 400 free

(Petrovich 2004)

| Contents | Men | | | Woman | | |
|------------------|------|------|-----------------|-------|------|-----------------|
| | 2003 | 1980 | Different, % | 2003 | 1980 | Different, % |
| Speed, m/s | 1,76 | 1,67 | 5,4 | 1,60 | 1,52 | 5,3 |
| Stroke Length, m | 2,49 | 2,22 | 12,2 | 2,08 | 1,74 | 19,5 |
| Stroke Rate | 41,0 | 44,0 | - 6,8 | 45,0 | 52,0 | - 13,5 |

From European junior's final to the Olympic final

Comparison between finalists 1980 and 2003 100 breast

(Petrovich 2004)

| Contents | Men | | | Woman | | |
|------------------|------|------|-----------------|-------|------|-----------------|
| | 2003 | 1980 | Different, % | 2003 | 1980 | Different, % |
| Speed, m/s | 1,65 | 1,48 | 11,5 | 1,47 | 1,29 | 14,0 |
| Stroke Length, m | 1,90 | 1,46 | 30,1 | 1,68 | 1,28 | 31,3 |
| Stroke Rate | 50,0 | 61,0 | - 18,0 | 50,0 | 61,0 | - 18,0 |

From European junior's final to the Olympic final

Comparison between finalists 1980 and 2003 200 breast

(Petrovich 2004)

| Contents | Men | | | Woman | | |
|------------------|------|------|-----------------|-------|------|-----------------|
| | 2003 | 1980 | Different, % | 2003 | 1980 | Different, % |
| Speed, m/s | 1,52 | 1,36 | 11,8 | 1,37 | 1,21 | 13,2 |
| Stroke Length, m | 2,23 | 1,58 | 41,1 | 2,03 | 1,42 | 42,9 |
| Stroke Rate | 39,0 | 52,0 | - 25,0 | 38,0 | 51,0 | - 25,5 |

From European junior's final to the Olympic final

How to swim 100 free faster?

| Distance | Contents | Men | | Woman | |
|----------|---------------|-----------------|-----------|-----------------|-----------|
| | | Improvement | Different | Improvement | Different |
| 100 free | Results | 0:52,08→0:49,02 | 6,3% | 0:59,17→0:54,64 | 8,3% |
| | Stroke Length | 1,97→2,29 | 16,2% | 1,73→2,00 | 16,3% |
| | Stroke Rate | 57,0→51,0 | -10,5% | 58,0→53,0 | -8,6% |
| | | | | | |

From European junior's final to the Olympic final

How to swim 200 free faster?

| Distance | Contents | Men | | Woman | |
|----------|---------------|-----------------|-----------|-----------------|-----------|
| | | Improvement | Different | Improvement | Different |
| 200 free | Results | 1:54,29→1:47,52 | 6,3% | 2:06,58→1:59,05 | 6,3% |
| | Stroke Length | 2,23→2,48 | 11,2% | 1,75→2,19 | 25,1% |
| | Stroke Rate | 46,0→44,0 | -4,4% | 55,0→44,0 | -20,0% |

From European junior's final to the Olympic final

How to swim 400 free faster?

| Distance | Contents | Men | | Woman | |
|----------|---------------|-----------------|-----------|-----------------|-----------|
| | | Improvement | Different | Improvement | Different |
| 400 free | Results | 3:59,52→3:47,27 | 5,4% | 4:23,15→4:10,00 | 5,3% |
| | Stroke Length | 2,22→2,49 | 12,2% | 1,74→2,08 | 19,5% |
| | Stroke Rate | 44,0→41,0 | -6,8% | 52,0→45,0 | -13,5% |

From European junior's final to the Olympic final

How to swim 100 breast faster?

| Distance | Contents | Men | | Woman | |
|---------------|---------------|-----------------|-----------|-----------------|-----------|
| | | Improvement | Different | Improvement | Different |
| 100 breast | Results | 1:07,57→1:00,60 | 11,5% | 1:15,51→1:08,03 | 14,0% |
| | Stroke Length | 1,46→1,90 | 30,1% | 1,28→1,68 | 31,3% |
| | Stroke Rate | 61,0→50,0 | -18,0% | 61,0→50,0 | -18,0% |

From European junior's final to the Olympic final

How to swim 200 breast faster?

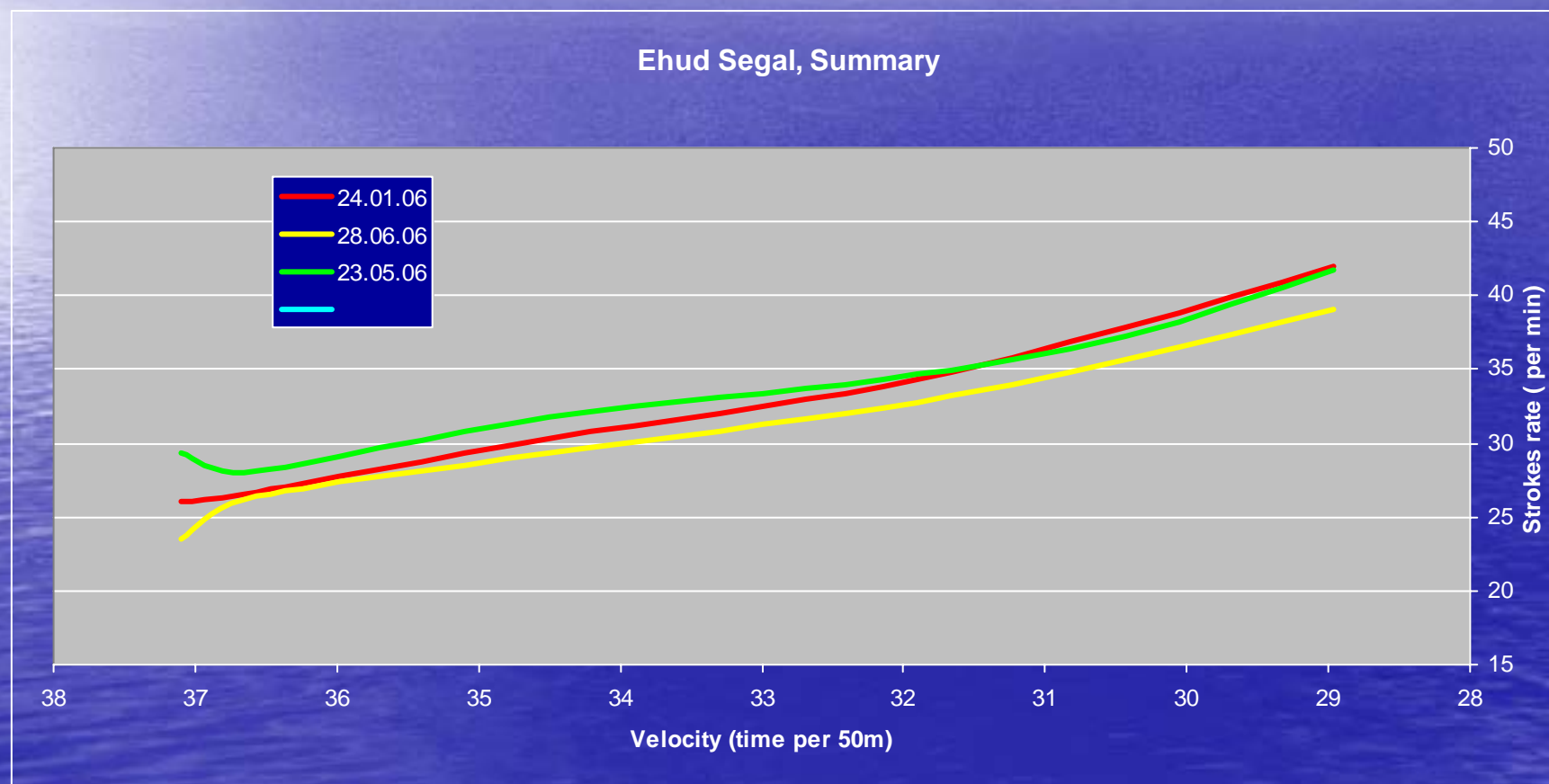
| Distance | Contents | Men | | Woman | |
|---------------|---------------|-----------------|-----------|-----------------|-----------|
| | | Improvement | Different | Improvement | Different |
| 200 breast | Results | 2:27,05→2:11,58 | 11,8% | 2:45,28→2:25,98 | 13,2% |
| | Stroke Length | 1,58→2,23 | 41,1% | 1,42→2,03 | 42,9% |
| | Stroke Rate | 52,0→39,0 | -25,0% | 51,0→38,0 | -25,5% |
| | | | | | |

From European junior's final to the Olympic final

Gennady Touretski recommends next swimming series:
6x50 on 3' progressively

| Time: | | Stroke Rate | Strokes Count |
|-------|--------|-------------|---------------|
| 1. | 0:37.5 | 27 | 28 |
| 2. | 0:34.5 | 31 | 28 |
| 3. | 0:32.5 | 35 | 28 |
| 4. | 0:30.5 | 39 | 28 |
| 5. | 0:28.5 | 41 | 29 |
| 6. | 0:26.0 | 47 | 29 |

From European junior's final to the Olympic final



From European junior's final to the Olympic final

Practical recommendation

or

How to use the lecture's material:

- **Use the LEN Swimming Competition Analyses by Rein Hailjand (www.swim.ee).**
- **Count Strokes at the time of the Competition and in every day's practices.**
- **Check the Stroke Rate of your swimmers and compare it with the Average of the finalist of the World and European junior Championships.**

From European junior's final to the Olympic final

Practical recommendation

or

How to use the lecture's material:

- **If your swimmers swam with LOWER Stroke Rate than the finalist (-5% or more) means that you have to (at first) increase the stroke rate and after that think about longer strokes (that option is valuable for 20-25% of the young swimmers).**
- **Other 75-80% of the finalists of the European Junior Championship have to increase the Stroke Length - that means they have to pay max attention for how to decrease the Stroke Count at the time of the trainings.**

From European junior's final to the Olympic final

Practical recommendation

or

How to use the lecture's material:

- **Do not change the Stroke Rate or Stroke Count rapidly – be happy if your swimmers begin swim with one stroke (for Fly and Breast) or two strokes (for Free and Back) LESS every 50 m lap. Start changes on lower speed and keep it till the Race Pace Swim.**
- **Use Gennady Tourecki Standard Set 6x50 progressively – you will find the “break or weak point”.**
- **It takes commitment on your part, but it is worth it.**

From European junior's final to the Olympic final

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